Space Weather Forecast

Issued on Thursday, 13 April 2023 at 12:16 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of M-class flares (R1-R2 Minor-Moderate radio blackouts) throughout.

Solar Activity: Solar activity has been Low with continued Common-class activity. There are currently eight sunspot regions on the visible disc. The group of spots near the southeast horizon, is the largest region on the disc and is showing moderate levels of magnetic complexity. Another magnetically complex region in the southern hemisphere has also produced some common-class flares. All other regions on the disc are currently small, simple or showing signs of decay. However, there is a new region appearing round the southeast limb that may contain further complexity.

There have been no Earth-directed Coronal Mass Ejections (CMEs) observed in available imagery over the past 24 hours. A filament (arc of plasma) that lifted from the southwest around 12/0300 UTC has been analysed and it is expected to miss ahead and to the south of Earth's orbit, although there is a low chance of a glancing impact on the 16th April.

Solar Wind / Geomagnetic Activity: The solar wind has generally been slow or slightly-elevated, between 360 and 420 km/s. The total Interplanetary Magnetic Field was weak (4-8 nT) through much of the period, but temporarily increased to moderate 12/1350-1440 UTC. The important north-south component varied weakly. Geomagnetic activity was Quiet (Kp 0-2), with an Unsettled (Kp3) interval between 13/0001-0300 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background levels, with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary.

Solar Activity: Solar activity is expected to be Low to Moderate, with a chance of isolated Moderate-class flares and a slight chance of a Strong-class flare.
Solar Wind / Geomagnetic Activity: There are currently no expected Earth-directed CMEs, although there is a low possibility of glancing arrivals late day 1 into day 2 (13th/14th), day 3 (15th) and day 4 (16th). Solar winds are likely to remain slow through much of the period, but may become slightly elevated at times from late on day 2 (14th), due to weak interactions with positive coronal hole fast winds. Geomagnetic activity is expected to generally be Quiet to Unsettled, with a chance of Active intervals, most likely in association with any transitory CME impacts.
Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background levels, although there is a slight chance of a minor radiation storm, with a large and complex sunspot region transiting the western hemisphere.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	5	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	50	50	50	50
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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